
Image source: NAPA


Image source: ACPA

Targeted Overlay Pavement Solutions (TOPS)

A solution for extending the life of an existing pavement investment.

U.S. Department of Transportation
Federal Highway Administration

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Innovation for a Nation on the Move

Disclaimer

- Except for any statutes or regulations cited, the contents of this presentation do not have the force and effect of law and are not meant to bind the public in any way. This presentation is intended only to provide information to the public regarding existing requirements under the law or agency policies.

EDC-6 TOPS Team

Asphalt Experts

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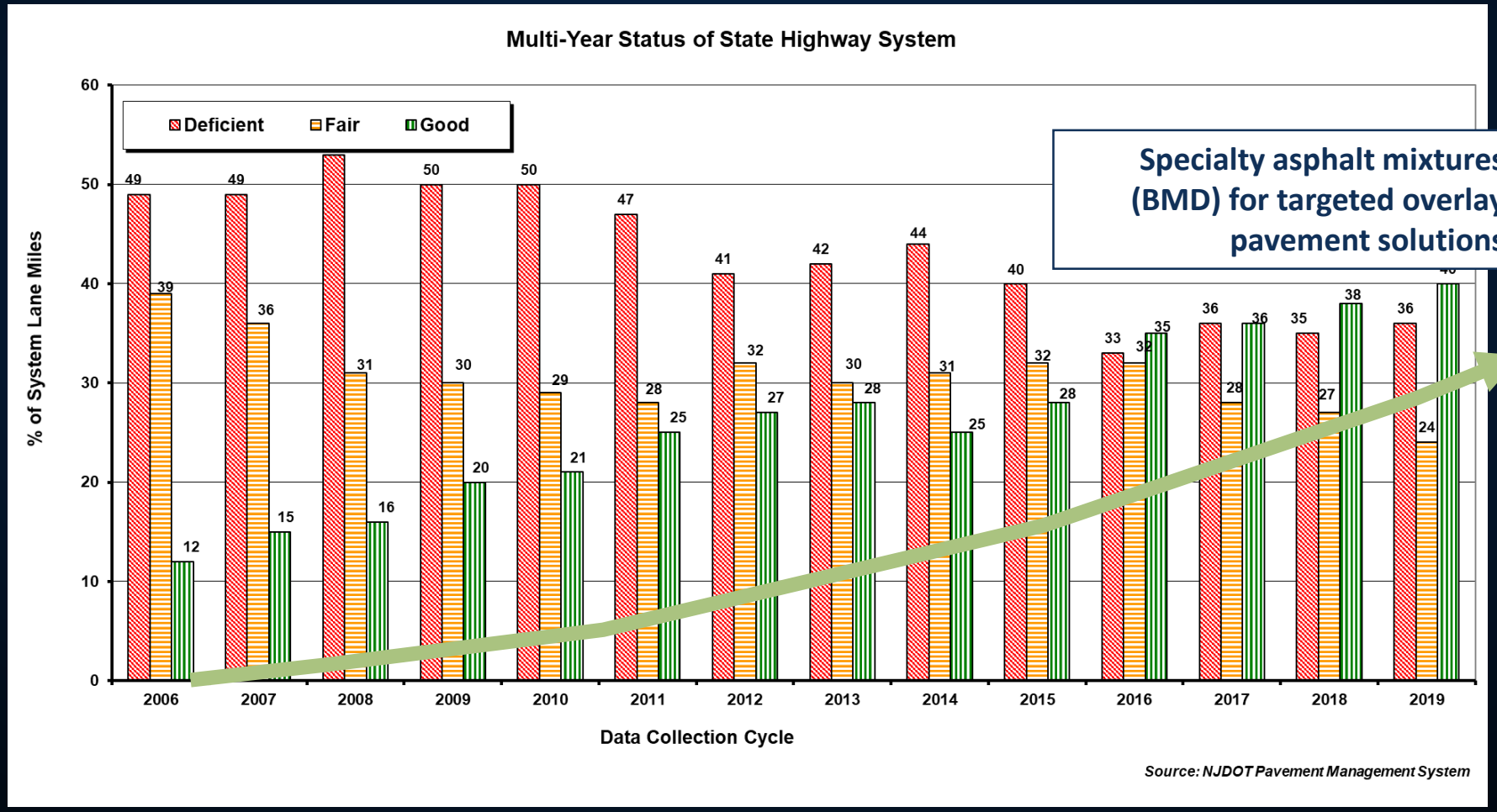
- Lisa Lukefahr, TX Concrete Paving Assoc.

Additional team members: Gina Ahlstrom, FHWA HQ and Hans Anker, FHWA NY Division.

The "Why" & Potential Benefits of BMD

NJDOT Benefits: Overall Pavement Network Improvements



Background

- Over 25% of all infrastructure funds go to pavements overlays.
- Agencies have 2.8 million miles to manage.

Image source: Iowa State University

How is this different than typical overlays?

TOPS matches treatments to high-priority, high-need locations.

Image Source: Georgia DOT

TOPS EDC Mission

Extend pavement life, increase load-carrying capacity, and improve safety, mobility, and user satisfaction in a cost-effective and sustainable manner by delivering targeted pavement overlay solutions to Federal, State, and local transportation agencies.

Asphalt

- Alternative materials and mixture design for higher-performance and durability
- Alternative overlay mixture designs & surface types to address:
  - Friction
  - Noise
  - Drainage

Image source: NAPA

What's in the TOPS toolbox?

Asphalt overlay products:

• High-Performance Thin Overlay (HPTO)	11 states
• Crack Attenuating Mixture (CAM)	7 states
• Highly Modified Asphalt (HiMA)	10 states
• Enhanced friction overlay	7 states
• Stone matrix asphalt (SMA)	5 states
• Asphalt Rubber Gap-Graded (ARGG)	4 states
• Open-Graded Friction Course (OGFC)	3 states
• Ultra-thin bonded wearing course (UTBWC)	3 states

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CENTER FOR ACCELERATING INNOVATION

Image source: NAPA

Asphalt Options

TOPS

https://www.fhwa.dot.gov/pavement/tops/

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High Performance Thin Overlay (HPTO)

- Rut resistant
- Crack mitigation
- Preserve pavement

- Balanced Mix Design

HPTO thickness
Source: West Virginia Division of Highways

Houston's Westheimer Project (2020)
Source: Stacy Hilbrich, Angel Brothers, Inc.

Crack Attenuating Mix (CAM)

- Distressed pavement with extensive cracking
- Interlayer for concrete rehabilitation
- Balanced Mix Design

Crack attenuating mix on Houston's IH-69 project.
Source: Tom Scullion, Texas A&M Transportation Institute

Highly Modified Asphalt (HiMA)

- Rut resistant
- Crack mitigation
- Preserve pavement

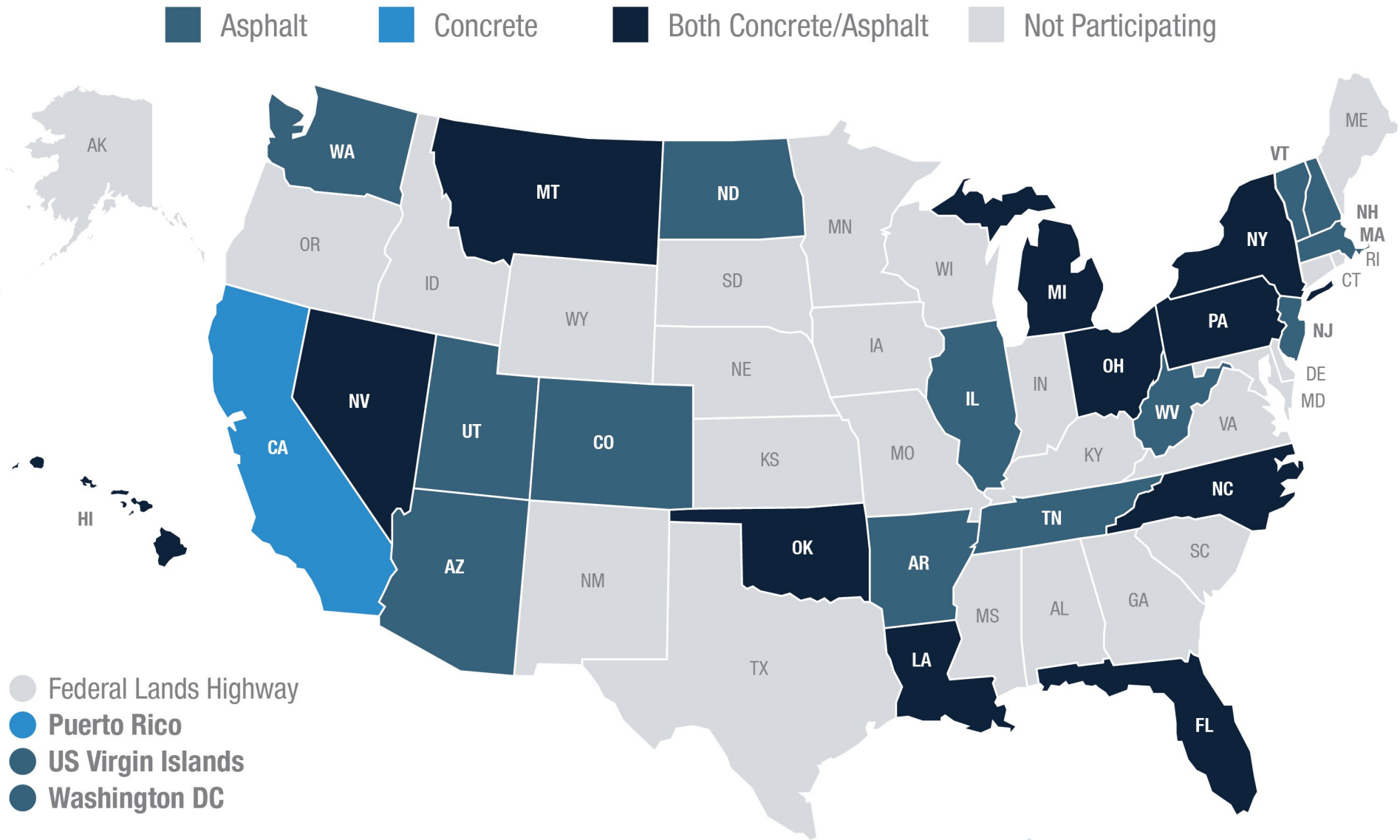
- 7-8% polymer
- > twice conventional polymer

Image: Florida DOT

TOPS Potential Benefits

- Improved Safety
- Improved Performance
- Retained Investments
- Cost Savings
- Environmentally Sound

States Participating in EDC TOPS



Targeted Overlay Pavement Solutions (TOPS)
State-Defined Baseline and Goal Stage

Stage	Stand (6 Total)	Walk (14 Total)	Jump (8 Total)	Leap (0 Total)	Fly (0 Total)
Institutionalized	NJ, NV, UT, WA				
Assessment	CO	OK			
Demonstration		CA, IL, MI, NY, VT			
Development	MT	AR, AZ, DC, LA, MA, NH, PR, WV	OH, PA		
Not Implemented			FL, HI, NC, ND, TN, VI		

Thank you

Questions / Comments Please?

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Illinois Division Office

EDC 6: Targeted Overlay Pavement Solutions (TOPS)

Illinois Update

Illinois Bituminous Paving Conference

December 8, 2021

Dennis Bachman, P.E.

Asset Management/Pavement & Materials Engineer

FHWA – IL Division

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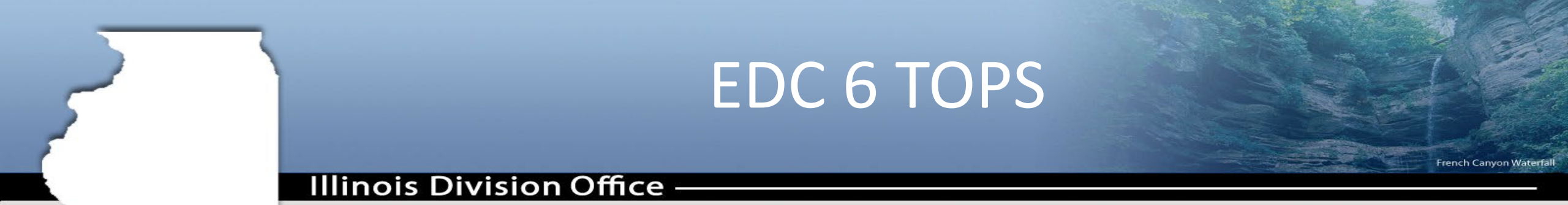

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Illinois Implementation Team

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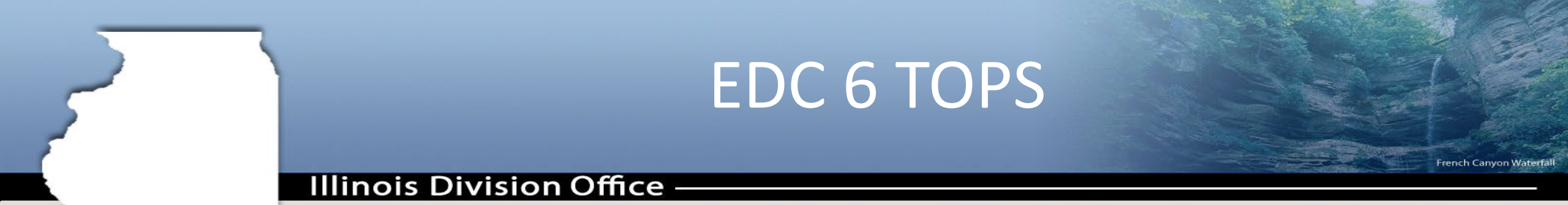

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- Innovation Implementation Stages
  - Not Implemented
  - Development Stage
  - Demonstration Stage – current stage (January 2021)
  - Assessment Stage – December 2022 goal
  - Institutionalized

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Crack Attenuating Mixture (CAM)

Highly Modified Asphalt (HiMA)

Stone Matrix Asphalt (SMA)

Ultra-Thin Bonded Wearing Course (UTBWC)

Enhanced Friction Overlay (EFO)

High-Performance Thin Overlay (HPTO)

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French Canyon Waterfall

- Crack Attenuating Mixture (CAM)
  - Fine-graded, similar to IL-4.75 mix, high binder content
  - Interlayer/surface course
    - Surface Course Friction – must use quality aggregate to alleviate lack of macrotexture
- Highly Modified Asphalt (HiMA)
  - High polymer content, 7 – 8% (≈ double typical poly binder)
- Stone Matrix Asphalt (SMA)
  - Illinois -> SMA-12.5 & SMA-9.5
  - ICT-R27-216: Optimizing the Use of Local Aggregates in Stone-matrix Asphalt (SMA)

Stone Matrix Asphalt (SMA)

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French Canyon Waterfall

- I-55 in District 6 - 2020

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SMA in Illinois

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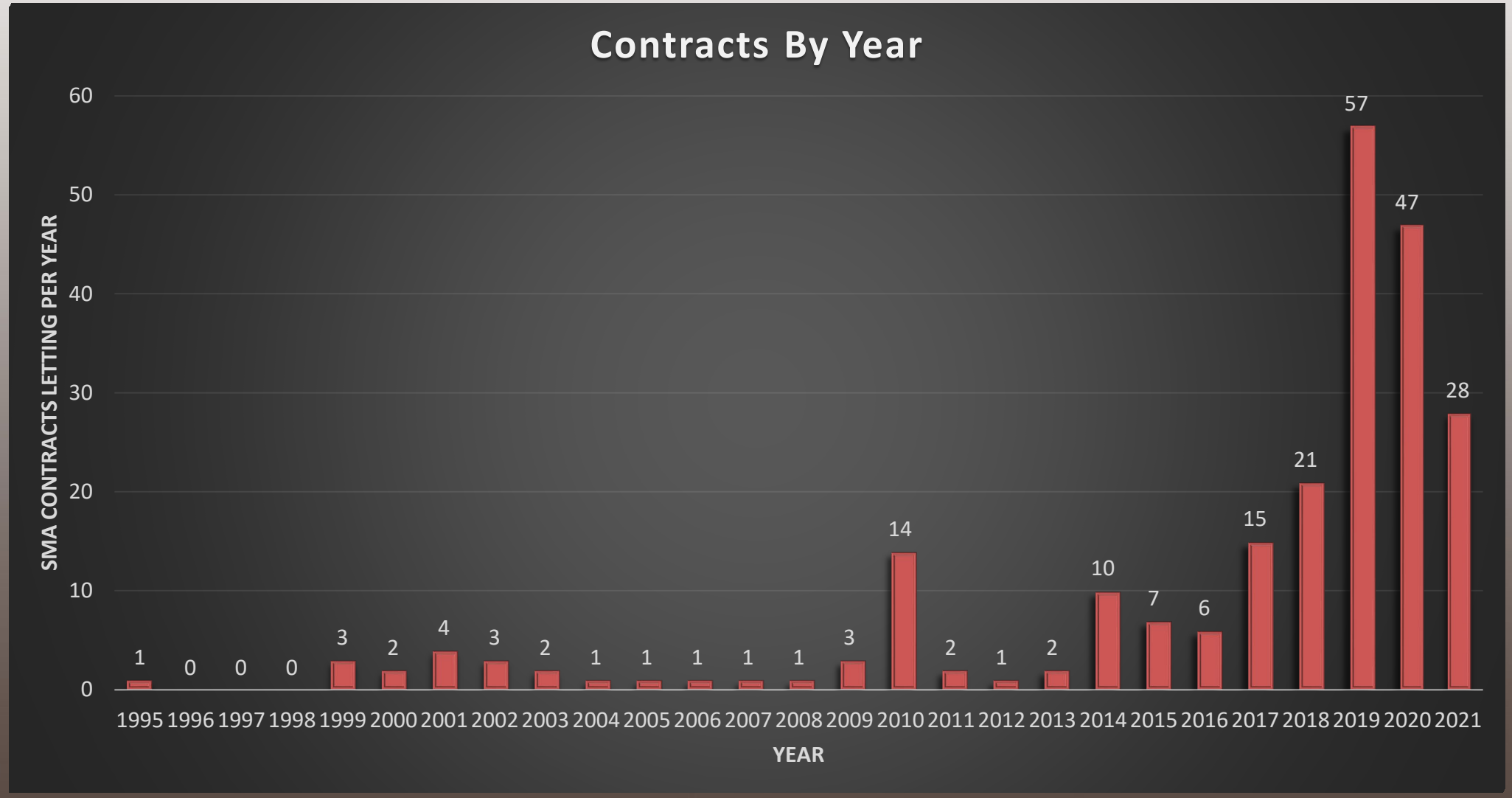

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SMA in Illinois

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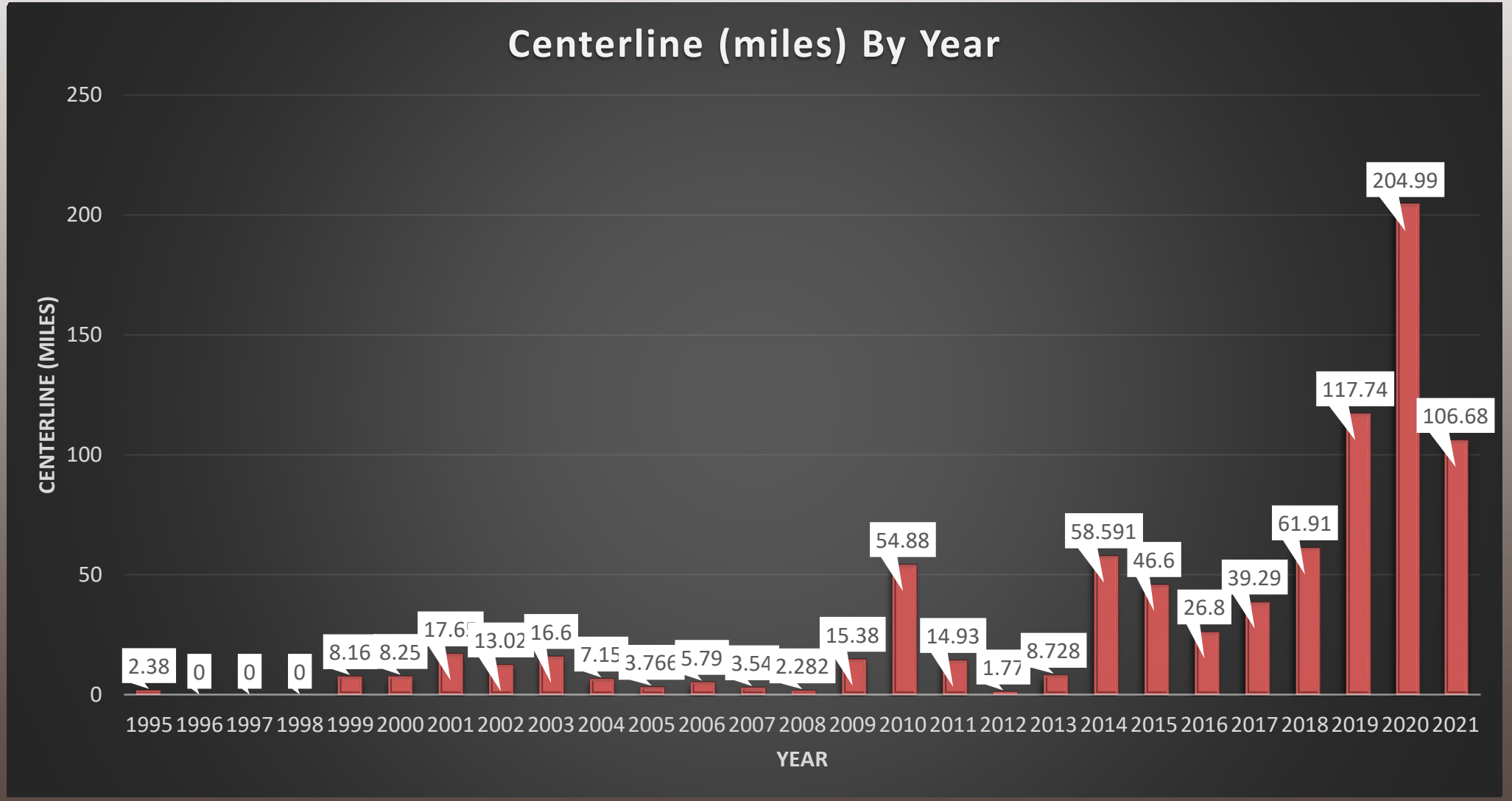

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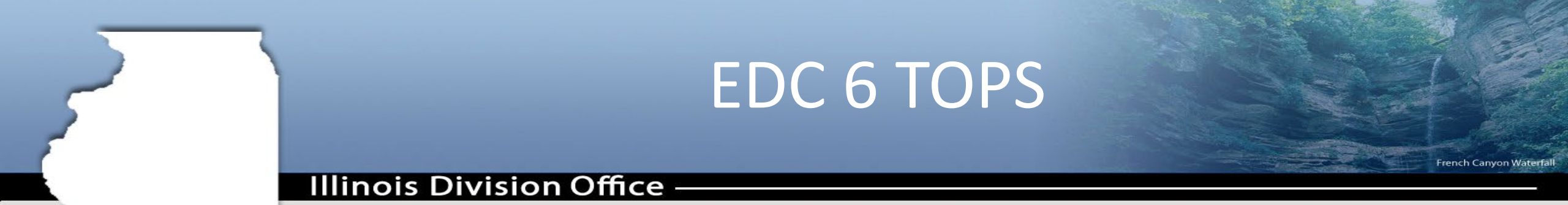

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- Ultra-Thin Bonded Wearing Course (UTBWC)
  - IDOT BDE Special Provision
- Enhanced Friction Overlay (EFO)
  - 4.75mm mix with calcined bauxite (≈ 40%)
  - Comparable friction to HFST, but longer lasting & lower $$
  - ICT-R27-042: Thin Quiet Long-Lasting High Friction Surface Layer (2013)
- High-Performance Thin Overlay (HPTO)
  - Fine-graded (IL-9.5FG), polymer-modified mix
  - Possible Illinois SMART project application?

Ultra-Thin Bonded Wearing Course (UTBWC)

French Canyon Waterfall

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- I-80 in District 3
  - Constructed:
    - 2008 (EB shown)
    - 2009 (WB)

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Ultra-Thin Bonded Wearing Course (UTBWC)

French Canyon Waterfall

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- I-55 in District 8 - 2021

Illinois Implementation Team: Next Steps

- Continue to:
  - explore proven options and consider for Illinois
  - evaluate performance of treatments
  - evaluate existing specifications/special provisions
  - encourage treatment usage
- Develop new special provisions
- 2022 – pilot projects??

French Canyon Waterfall

??? Questions ???

Thanks!